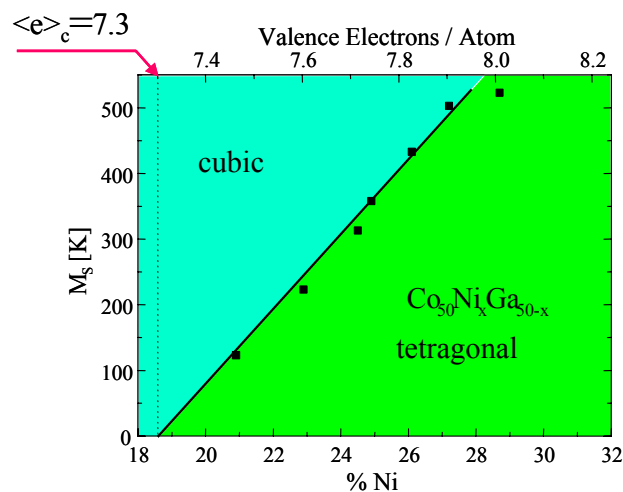
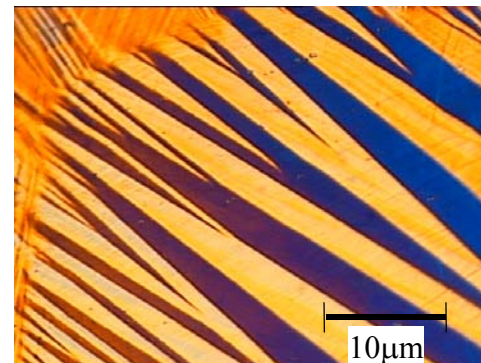




A New Ferromagnetic Shape Memory Alloy System

At the beginning of this research it was known that the bcc Heusler Alloy Ni_2MnGa transforms martensitically thereby forming the new class of potentially economically important ferromagnetic shape memory alloys, FSMAs. A focussed search based on the empirically known relationship, *displayed right*, lead to the new FSMA system Ni_2CoGa , *characteristic microstructure to the right*, that is now investigated in more detail. This system is more promising than Ni_2MnGa because it has the potential of forming adaptive nanostructures that display very small hystereses. The University of Hirosaki and Kanazawa Institute of Technology are partners in this work.

e.g. Microstructures and magnetic properties of rapidly solidified CoNiGa FSMAs, Y. Kishi, C. Cranciunescu, M. Sato, T. Okazaki, Y Furuya and M. Wuttig, J. MMM 262, 186, 2003; 1 Patentdisclosure





Magnetostrictive Body Centered Iron Base Alloys

NSF DMR-0095166, M. Wuttig, PI



Education and Outreach

Two undergraduates, Shawna Dean and Marc Lechevallier, as well as one junior from Montgomery Blair High School, Julie Bertaut, participated in the research in the summers of 2002 and 2003. Shawna, *pictured on the right preparing a new alloy*, will graduate in 12/03 and will continue at UMD as a graduate student working on an SMA/MEMS project. Marc will finish at the Ecole Polytechnique and plans on returning to UMD as a graduate student. Julie returned to MBHS to finish her high school education and is applying to various universities' science and engineering programs.

